

EiconCard S90

for PCI-Compatible Bus

Installation Guide
203-187-01



First Edition (March 1998)

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Introduction

The EiconCard S90 is a PCI Plug-and-Play (PnP) card that offers X.25 connectivity through a high-speed port (supporting V.24, V.35, EIA-530, V.36/RS-449, or X.21 interfaces) at speeds of up to 2 Mbps.

Note *The EiconCard S90 also supports protocols such as SDLC, PPP, and Frame Relay.*

Hardware Features

The EiconCard S90 features a 25 MHz Motorola 68302 microprocessor with 1 MB of RAM and 1 MB of FLASH memory. It has one independent Very High-Speed Interface (VHSI) port, supporting full duplex communications over a V.24, V.35, EIA-530, V.36/RS-449, or X.21 interface at speeds of up to 2 Mbps (depending on the type of interface selected).

Ease of Use

The EiconCard S90 features automatic interface selection. The intelligent controller on the card detects the type of cable connected to the VHSI port and automatically selects the matching interface.

About this Manual

This guide describes how to install the EiconCard S90 in any computer with an IBM PC-compatible PCI bus. It covers the following topics:

- Installing the card and connecting cables.
- Interpreting the status light on the card.

For instructions on setting up communications protocols and using applications, consult the documentation provided with your networking software.

Installing the EiconCard S90

The steps below describe how to install the EiconCard S90. If you want the EiconCard S90 to be available to multiple users on a LAN, install it in the PC that will function as a gateway for the LAN.

1 Prepare the PC

Turn off the PC and disconnect its power cable. Remove the cover of the PC according to the instructions that came with it.

2 Install the EiconCard S90

Insert the EiconCard S90 into any available PCI port. Secure the EiconCard S90 to the chassis of the PC using the bracket-retaining screw. Reinstall the cover of the PC and reconnect the power cable.

3 Test the EiconCard S90

The application software that you purchased with the EiconCard S90 includes a test program to verify the card's integrity. Consult the documentation supplied with this software for details.

4 Configure the EiconCard S90

Before you can use the EiconCard S90, you must configure it to work with your communications software. The documentation which came with this software contains complete instructions on how to configure the card.

During configuration, note that the LED flashes. This feature is useful when more than one card is installed in the same PC.

Consult the documentation which came with your networking software for more information about the LED.

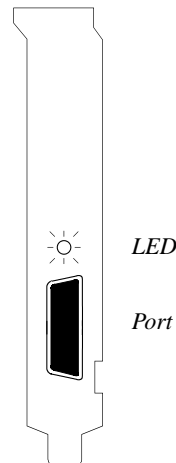


Figure 1. End Bracket

Selecting an Interface

The EiconCard S90 can connect as a DTE to devices such as Data Service Units (DSUs) which support one of the following interfaces: V.24, V.35, EIA-530, V.36/RS-449, or X.21. It can also connect directly to a host computer, or back-to-back to another EiconCard.

Table 1 lists the most common connections supported by the VHSI port, and specifies the part number of the required Eicon Technology cable. For information on making your own cables, see “Interface Specifications” on page 8.

<i>Interface</i>	<i>Connection</i>	<i>Part #</i>
V.24	to V.24 DCE	300-077
	to V.24 DTE	300-078
V.35	to V.35 DCE	300-076
	to V.35 DCE (France)	300-083
EIA-530	to EIA-530 DCE	300-080
V.36/RS-449	to V.36/RS-449 DCE	300-079
X.21	to X.21 DCE	300-081
Direct	to VHSI port on another EiconCard S90 or compatible Eicon Technology EiconCard	300-075

Table 1. Standard Interface Cables

To use an interface, simply install the appropriate cable. The EiconCard S90 recognizes the cable and automatically prepares the port for that interface.

Consult the documentation which came with your networking software for more information about port configuration.

Interface Specifications

The standards compliant with each interface supported on the VHSI port are listed in Table 2. The rest of this section describes the allocation of pins used to implement the electrical and signaling requirements of each interface. A wiring diagram is also provided, to show the correspondence of the interface pinout to the VHSI port.

Interface	Standard	Compatibility
V.24	CCITT V.24	Signaling
	CCITT V.28	Electrical
	CCITT X.21bis	Electrical and signaling
	EIA RS-232-C	Electrical and signaling
	ISO 2110	Connector type for the DCE side of a V.24 VHSI Modem Cable
V.35	CCITT V.28	Some signals for electrical
	CCITT V.35	Some signals for electrical and signaling
	ISO 2593	Connector type for the DCE side of a V.35 VHSI Modem Cable
EIA-530	RS-422	Electrical
	RS-423	Electrical
	ISO 2110	Connector type for the DCE side of a EIA-530 VHSI Modem Cable
V.36/RS-449	CCITT V.10	Electrical
	CCITT V.11	Electrical
	RS-422	Electrical
	RS-423	Electrical
	ISO 4902	Connector type for the DCE side of a V.36/RS-449 VHSI Modem Cable
X.21	CCITT X.21	Signaling
	CCITT V.11	Electrical
	CCITT X.27	Electrical
	EIA RS-422-A	Electrical
	ISO 4903	Connector type for the DCE side of an X.21 VHSI Modem Cable

Table 2. Interface Compatibility

Cable Construction Information

If you plan to construct your own VHSI cables, be sure to observe the guidelines given below.

Wire Gauge, Grounding, and Pairing

- Use 28 AWG 7-strand wire with 0.020–0.028" insulation.
- The chassis must be grounded both by a drain wire and by the braid; both must be connected to the connector case and shell at each end of the cable. The braid must be connected through its full circumference.
- Wires identified under the heading “Twisted Pairs” must be paired. If you do not install twisted pairs correctly, the cable will not work.

Type of Connectors

The VHSI port accepts a high density 36-pin male cable connector. The types of connectors used on the interface-specific end of the cable are as follows:

<i>Interface</i>	<i>Connector</i>
V.35	Type M
V.24	DB25
V.36/RS-449	DB37
EIA-530	DB25
X.21	DB15

Table 3. Connector Types

The V.24 Interface

A pin-out diagram for the V.24 interface is shown in Figure 2. The signal definitions and names are listed in Table 4.

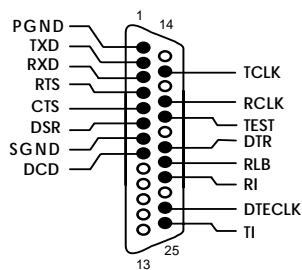


Figure 2. V.24 Interface

Pin #	Signal	Name	Direction	CCITT #
1	PGND	Protective Ground	Common	101
2	TXD	Transmit Data	Output	103
3	RXD	Receive Data	Input	104
4	RTS	Request to Send	Output	105
5	CTS	Clear to Send	Input	106
6	DSR	Data Set Ready	Input	107
7	SGND	Signal Ground	Common	102
8	DCD	Data Carrier Detect	Input	109
15	TCLK	Transmit Clock (DCE)	Input	114
17	RCLK	Receive Clock	Input	115
18	TEST	Local Loopback Activation	Output	141
20	DTR	Data Terminal Ready	Output	108
21	RLB	Remote Loopback	Output	140
22	RI	Ring Indicator	Input	125
24	DTECLK	Transmit Clock (DTE)	Output	113
25	TI	Test Indicator	Input	142

Table 4. V.24 Interface Signals

VHSI—V.24 Connections

The wiring diagram below shows the connections required to construct a VHSI—V.24 cable. For the additional information required to construct your own cables, see “Cable Construction Information” on page 9.

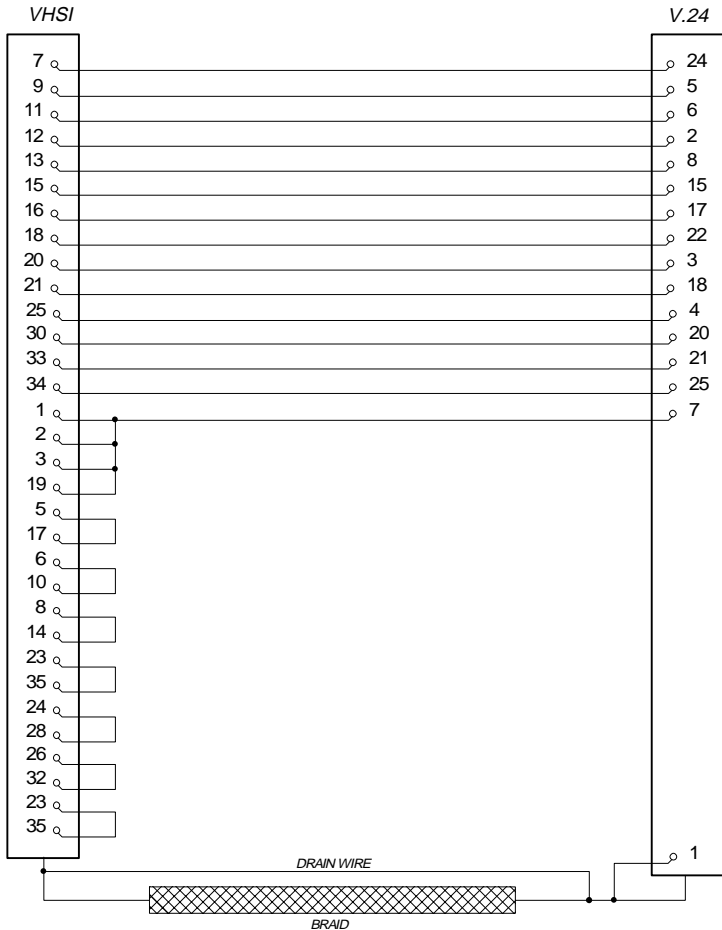


Figure 3. VHSI—V.24 Connections

The V.35 Interface

A pin-out diagram for the V.35 interface is shown in Figure 4. The signal definitions and names are listed in Table 5.

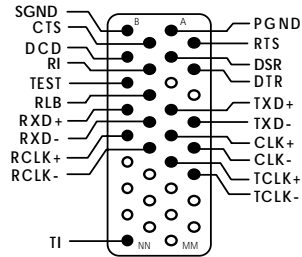


Figure 4. V.35 Interface

Pin #	Signal	Name	Direction	CCITT #
A	PGND	Protective Ground	Common	101
B	SGND	Signal Ground	Common	102
C	RTS	Request to Send	Output	105
D	CTS	Clear to Send	Input	106
E	DSR	Data Set Ready	Input	107
F	DCD	Data Carrier Detect	Input	109
H	DTR	Data Terminal Ready	Output	108
J	RI	Ring Indicator	Input	125
L	TEST	Local Loopback Activation	Output	141
N	RLB	Remote Loopback	Output	140
P	TXD+	Transmit Data	Output	103A
R	RXD+	Receive Data	Input	104A
S	TXD-	Transmit Data	Output	103B
T	RXD-	Receive Data	Input	104B
U	CLK+	Transmit Clock (DTE)	Output	113A
V	RCLK+	Receive Clock (DCE)	Input	115A
W	CLK-	Transmit Clock (DTE)	Output	113B
X	RCLK-	Receive Clock (DCE)	Input	115B
Y	TCLK+	Transmit Clock (DCE)	Input	114A
AA	TCLK-	Transmit Clock (DCE)	Input	114B
NN	TI	Test Indicator	Input	142

Table 5. V.35 Interface Signals

VHSI—V.35 Connections

The wiring diagram below shows the connections required to construct a VHSI—V.35 cable. For the additional information required to construct your own cables, see “Cable Construction Information” on page 9.

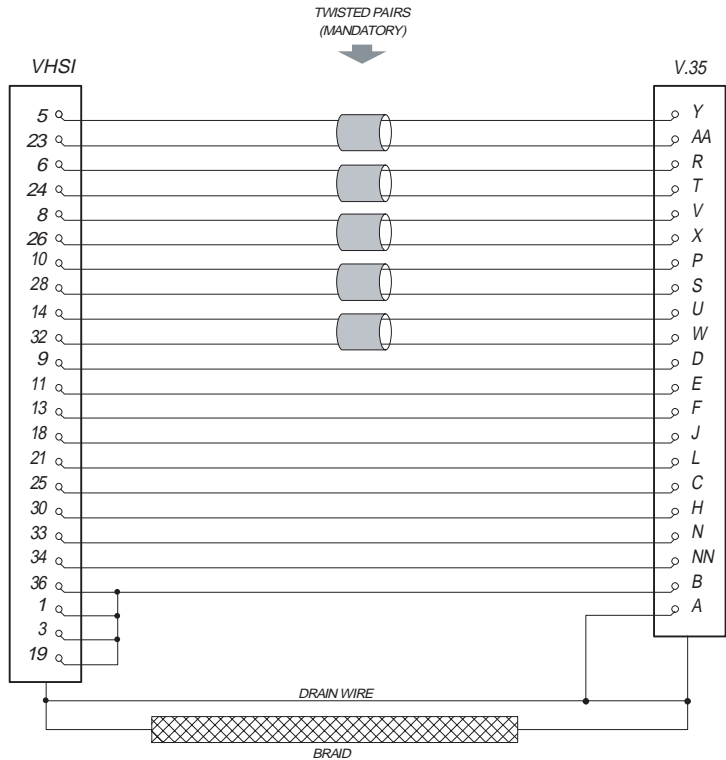


Figure 5. VHSI—V.35 DCEConnections

The EIA-530 Interface

A pin-out diagram for the EIA-530 interface is shown in Figure 6. The signal definitions and names are listed in Table 6.

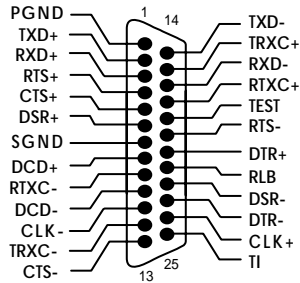


Figure 6. EIA-530 Interface

Pin #	Signal	Name	Direction	CCITT #	EIA #
1	PGND	Protective Ground	Common	101	-
2	TXD+	Transmit Data	Output	103A	BA(A)
3	RXD+	Receive Data	Input	104A	BB(A)
4	RTS+	Request to Send	Output	105A	CA(A)
5	CTS+	Clear to Send	Input	106A	CB(A)
6	DSR+	Data Set Ready	Input	107A	CC(A)
7	SGND	Signal Ground	Common	102B	AB
8	DCD+	Data Carrier Detect	Input	109A	CF(A)
9	RTXC-	Receive Clock (DCE)	Input	115B	DD(B)
10	DCD-	Data Carrier Detect	Input	109B	CF(B)
11	CLK-	Transmit Clock (DTE)	Output	113B	DA(B)
12	TRXC-	Transmit Clock (DCE)	Input	114B	DB(B)
13	CTS-	Clear to Send	Output	106B	CB(B)
14	TXD-	Transmit Data	Output	103B	BA(B)
15	TRXC+	Transmit Clock (DCE)	Input	114A	DB(A)
16	RXD-	Receive Data	Input	104B	BB(B)
17	RTXC+	Receive Clock (DCE)	Input	115A	DD(A)
18	TEST	Local Loopback	Output	141A	LL
19	RTS-	Request to Send	Output	105B	CA(B)
20	DTR+	Data Terminal Ready	Output	108A	CD(A)
21	RLB	Remote Loopback	Output	140A	RL
22	DSR-	Data Set Ready	Input	107B	CC(B)
23	DTR-	Data Terminal Ready	Output	108B	CD(B)
24	CLK+	Transmit Clock (DTE)	Output	113A	DA(A)
25	TI	Test Indicator	Input	142A	TM

Table 6. EIA-530 Interface Signals

VHSI—EIA-530 Connections

The wiring diagram below shows the connections required to construct a VHSI—EIA-530 cable. For the additional information required to construct your own cables, see “Cable Construction Information” on page 9.

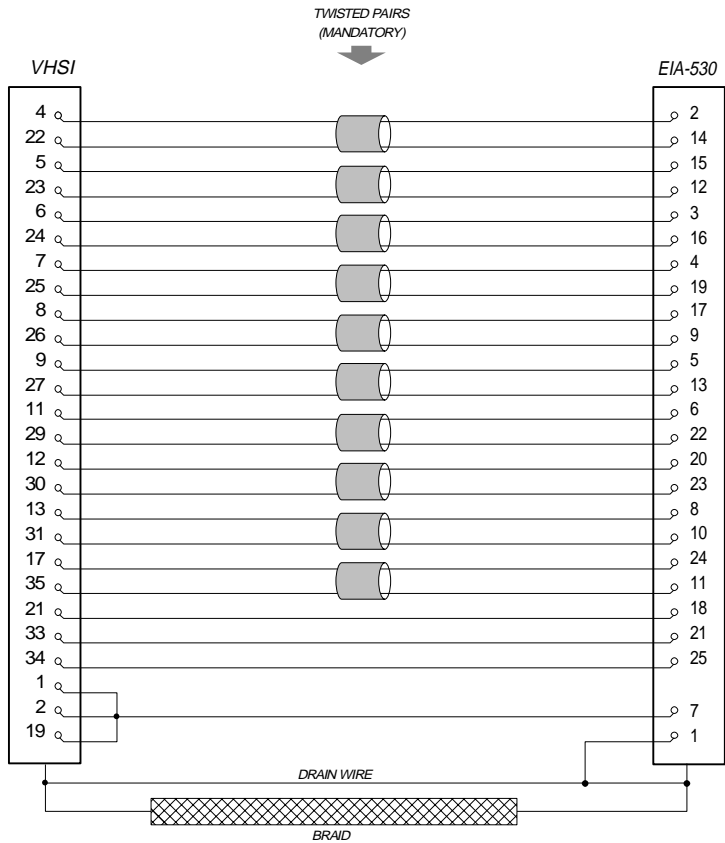


Figure 7. VHSI—EIA-530 Connections

The V.36/RS-449 Interface

A pin-out diagram for the V.36/RS-449 interfaces is shown in Figure 8. The signal definitions and names are listed in Table 7.

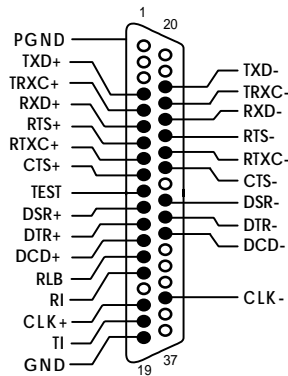


Fig. 8. V.36/RS-449 Interface

Pin #	Signal	Name	Direction	CCITT #
Case	PGND	Protective Ground	Common	101
4	TXD+	Transmit Data	Output	103A
5	TRXC+	Transmit Clock (DCE)	Input	114A
6	RXD+	Receive Data	Input	104A
7	RTS+	Request to Send	Output	105A
8	RTXC+	Receive Clock (DCE)	Input	115A
9	CTS+	Clear to Send	Input	106A
10	TEST	Local Loopback Activation	Output	141A
11	DSR+	Data Set Ready	Input	107A
12	DTR+	Data Terminal Ready	Output	108A
13	DCD+	Data Carrier Detect	Input	109A
14	RLB	Remote Loopback	Output	140A
15	RI	Ring Indicator	Input	125A
17	CLK+	Transmit Clock (DTE)	Output	113A
18	TI	Test Indicator	Input	142A
19	GND	DTE Common Return	Common	102A/B
22	TXD-	Transmit Data	Output	103B
23	TRXC-	Transmit Clock (DCE)	Output	114B
24	RXD-	Receive Data	Input	104B
25	RTS-	Request to Send	Output	105B
26	RTXC-	Receive Clock (DCE)	Input	115B
27	CTS-	Clear to Send	Input	106B
29	DSR-	Data Set Ready	Input	107B
30	DTR-	Data Terminal Ready	Output	108B
31	DCD-	Data Carrier Detect	Input	109B
35	CLK-	Transmit Clock (DTE)	Output	113B

Table 7. V.36/RS-449 Interface Signals

VHSI—V.36/RS-449 Connections

The wiring diagram below shows the connections required to construct a VHSI—V.36/RS-449 cable. For the additional information required to construct your own cables, see “Cable Construction Information” on page 9.

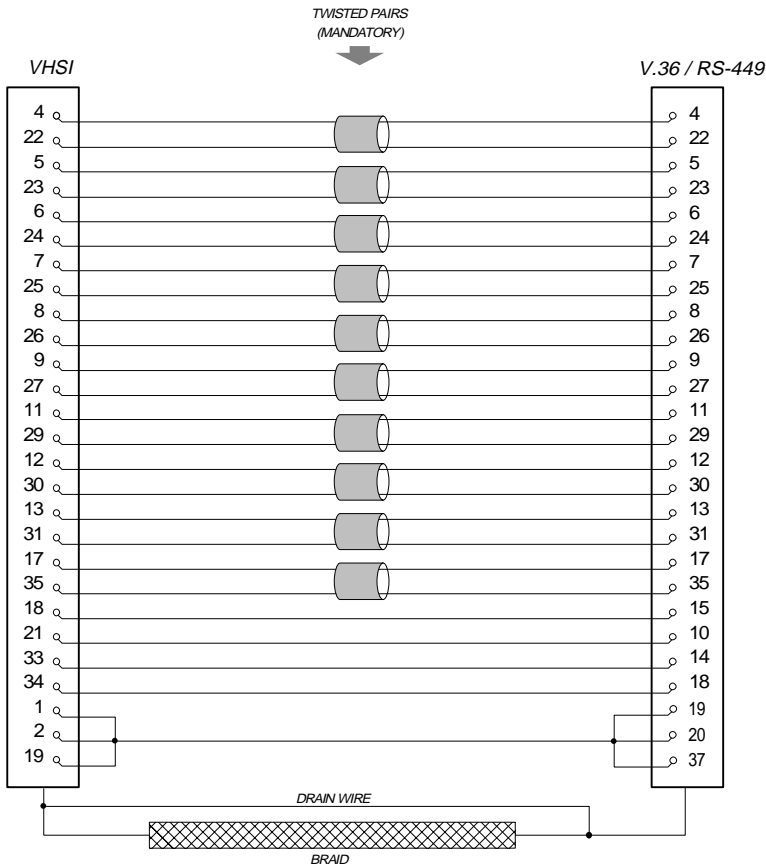


Figure 9. VHSI—V.36/RS-449 Connections

The X.21 Interface

A pin-out diagram for the X.21 interface is shown in Figure 10. The signal definitions and names are listed in Table 8.

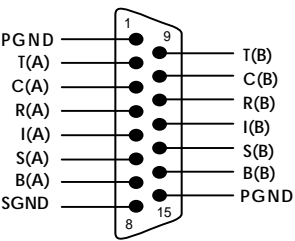


Figure 10. X.21 Interface

Pin #	Signal	Name	Direction	CCITT #
1/15	PGND	Protective Ground	Common	101
2	T(A)	Transmit Data (+)	Output	103A
3	C(A)	Control Signal (+)	Output	105A
4	R(A)	Receive Data (+)	Input	104A
5	I(A)	Indication (+)	Input	109A
6	S(A)	Signal Element Timing (+)	Input	115A
7	B(A)	Byte Timing (+)	Input	114A
8	SGND	Signal Ground	Common	102
9	T(B)	Transmit Data (-)	Output	103B
10	C(B)	Control Signal (-)	Output	105B
11	R(B)	Receive Data (-)	Input	104B
12	I(B)	Indication (-)	Input	109B
13	S(B)	Signal Element Timing (-)	Input	115B
14	B(B)	Byte Timing (-)	Input	114B

Table 8. X.21 Interface Signals

VHSI—X.21 Connections

The wiring diagram below shows the connections required to construct a VHSI—X.21 cable. For the additional information required to construct your own cables, see “Cable Construction Information” on page 9.

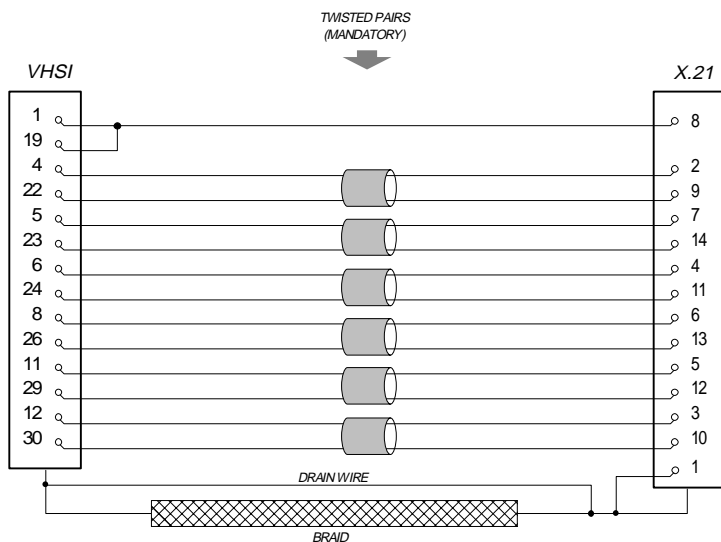


Figure 11. VHSI—X.21 Connections

Back-to-Back Connections

The wiring diagram below shows the connections required to construct a back-to-back VHSI—VHSI cable. Back-to-back operations are conducted through the V.36 interface. For the additional information required to construct your own cables, see “Cable Construction Information” on page 9.

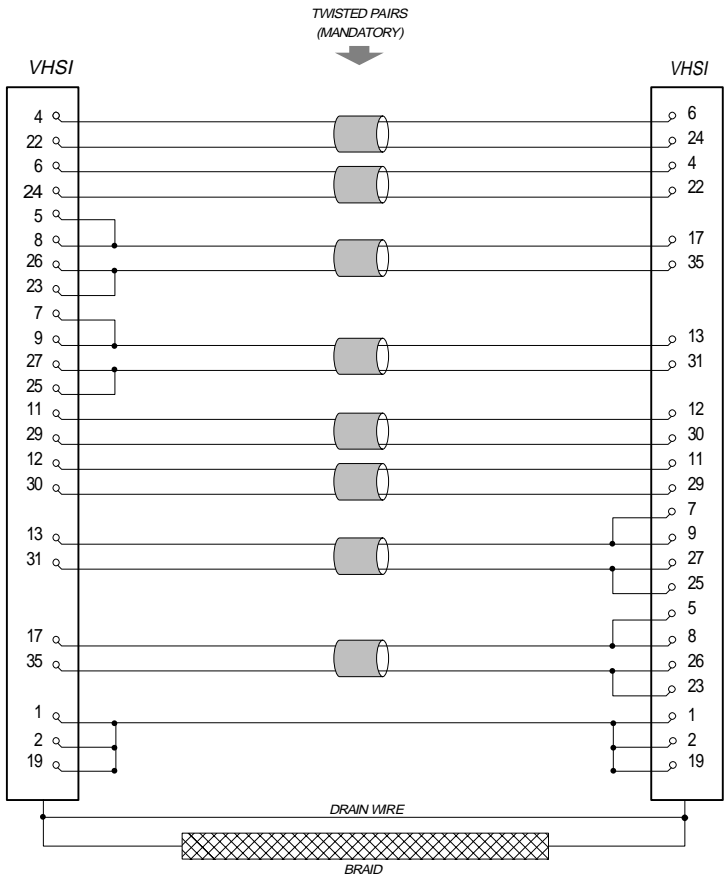


Figure 12. VHSI—VHSI Connections

Technical Specifications

Technical Data

- PCI bus compatible (32-bit slot)
- Motorola 68302 CPU @ 25 MHz
- 1 MB RAM
- 1 MB FLASH memory

Hardware Installation

- Automatic configuration of interrupt request level setting and I/O address
- 32-bit I/O access

External Interface

- One 36-pin female port

VHSI Port

- One VHSI port connects to 36-pin high-density male connector
- Support for V.24, V.35, EIA-530, and V.36/RS-449
- X.21 with V.11 (X.27) signaling
- Internal or external clocking (DTE or DCE) or split (transmit internal, receive external)

Performance

- 2 Mbps full duplex

Power Requirements

- 1.0 A @ +5V
- 45 mA @ +12V
- 50 mA @ -12V

Environmental Requirements

- Operating temperature: 0°C to 50°C
- Operating humidity: 0 to 90% (non-condensing)
- Barometric operating pressure: 86 to 106 kPascals
- Maximum tolerance in power supply variation: +5% to -5%

International Regulatory Information

Regulatory Information for the USA:

FCC Warning

Declaration of Conformity

We:

Eicon Technology Inc.
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Suite 503
Carrollton, Texas
USA 75006
1-800-80-EICON
(972) 417-5515
Fax: (972) 417-5610

Declare under our sole legal responsibility that the product to which this declaration relates, are in conformity with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

Warning: Changes or modifications to this unit not expressly approved by Eicon Technology Corporation could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.
- This device requires a shielded cable to comply with the FCC Class B emissions limits. Use of unshielded interface cables is prohibited.

Regulatory Information for Canada

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

Regulatory Information for Europe

This equipment displays the CE168X mark to show that it has been tested and found to fully comply with the Terminal Equipment, EMC and Low Voltage Directives (91/263/EEC, 89/336/EEC and 72/23/EEC, as amended by Directive 93/68/EEC).

Safety Status: SELV

No voltages within this equipment exceed SELV voltages. All interconnection points and ports are SELV.

User/Installer Instructions for the United Kingdom

EiconCard S90 Communications Board

Important Safety Considerations When Installing Into A Host Computer System

The EiconCard S90 is a half-length PCI compatible card.

The EiconCard S90 is approved only for installation in an EN60950 approved host, surrounded by a minimum 2.5 mm air gap, and with host attachments which are either type approved for such apparatus, or, if supplied after March 1, 1989, are marked with or supplied with a statement that the host is supplied under: GENERAL APPROVAL NUMBER NS/G/1234/J/100003.

Installation Within A Spare Slot Position

In order to comply with Safety Regulations particular care should be taken to ensure adequate separation between the EiconCard S90, the components mounted on it, and any adjacent modules.

Except at the edge connector which plugs into the host's expansion slot, clearance and creepage distances of X mm and Y mm, as listed in Table 9, must be maintained between the EiconCard S90 card and other parts of the host including any other expansion cards fitted.

Clearance X mm	Creepage Y mm	Voltage used or generated by other parts of the host or expansion card Vrms or Vdc
2.0	2.4 (3.8)	up to 50
2.6	3.0 (4.8)	up to 125
4.0	5.0 (8.0)	up to 250
4.0	6.4 (10.0)	up to 300

Table 9. Creepage Distances

The creepage distances apply when installed in a normal office environment. The creepage distances shown in parentheses apply where the local environment within the PC is subject to conductive pollution or dry non-conductive pollution which could become conductive due to condensation.

These distances can be checked by measuring between the adjacent parts as shown below. X shows the clearance distance which is the shortest distance in air between two points. Y shows the creepage path (along surfaces) between the same two points.

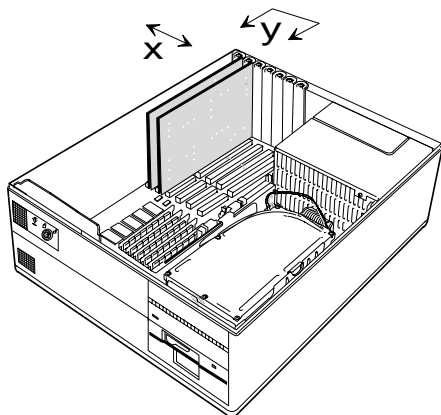


Figure 13. Typical Installation

Power Consumption

Check that power supply will not be overloaded. Maximum power consumption of the board is stated on page 21. The user should check that the total power drawn by the host computer, the EiconCard S90, and any other peripherals, does not exceed the capability of the host power supply unit.

Limited Warranty

Eicon Technology Corporation warrants to the original purchaser of this Eicon Technology Product that it is to be in good working order for a period of five (5) years from the date of purchase from Eicon Technology or an authorized Eicon Technology dealer. Should this Product, in Eicon Technology's opinion, fail to be in good working order at any time during this five year warranty period, Eicon Technology will, at its option, repair or replace this Product at no additional charge except as set forth below. Repair parts and replacement Products will be furnished on an exchange basis and will be either reconditioned or new. All replaced parts and Products become property of Eicon Technology. This Limited Warranty does not include service to repair damage to the Product resulting from accident, disaster, misuse, abuse, or non-authorized alterations, modifications, and/or repairs.

Products requiring Limited Warranty service during the warranty period should be delivered to Eicon Technology with proof of purchase. If the delivery is by mail, you agree to insure the Product or assume the risk of loss or damage in transit. You also agree to prepay shipping charges to Eicon Technology and to use the original shipping container or equivalent.

EICON TECHNOLOGY HEREBY DISCLAIMS ALL OTHER EXPRESSED AND IMPLIED WARRANTIES FOR THIS PRODUCT INCLUDING, BUT NOT LIMITED TO, THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Some jurisdictions do not allow the exclusion of implied warranties, so the above limitations may not apply to you.

IN NO EVENT WILL EICON TECHNOLOGY BE LIABLE IN ANY WAY TO THE USER FOR DAMAGES, INCLUDING ANY LOST PROFITS, LOST SAVINGS, OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF, OR INABILITY TO USE, SUCH PRODUCT. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages for consumer products, so the above limitations or exclusions may not apply to you.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH MAY VARY FROM ONE JURISDICTION TO ANOTHER.

This Limited Warranty applies to hardware products only.

Product Comment Form

EiconCard S90
Installation Guide
203-187-01

We value your comments. Please use the tables below to rate this product.

Name _____

Title _____

Company _____

Address _____

EiconCard S90

Packaging	<i>Poor</i>	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	<i>Excellent</i>
Configuration	<i>Difficult</i>	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	<i>Easy</i>
Performance	<i>Poor</i>	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	<i>Excellent</i>
Workmanship	<i>Poor</i>	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	<i>Excellent</i>

Installation Guide

Accuracy	<i>Low</i>	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	<i>High</i>
Organization	<i>Confusing</i>	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	<i>Clear</i>
Readability	<i>Difficult</i>	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	<i>Easy</i>
Presentation	<i>Poor</i>	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	<i>Excellent</i>

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